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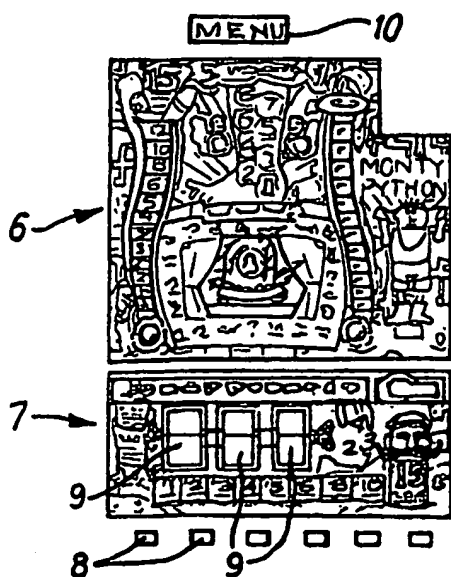
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(54) Title: VIDEO DISPLAY SYSTEMS



(57) Abstract: A video monitor (2) displays a video simulation (6-9) of a coin-operated player-operable entertainment machine. The video simulation can be selected from a range of simulations of different machines using a player-operable selector and a menu (3). The video simulations are derived from an internet web server (1) to which the monitor (2) is connected. The player can play a game with the selected video-simulated machine after providing game-playing credit. The machine may have symbol-bearing reels (9) which display rotating symbol sequences and come to rest to display a combination of selected symbols which, if a winning combination, results in a pay-out. The symbols may be selected from greater numbers of symbols than are contained in the rotating sequences. Also compensation may be used to maintain the pay-out percentage within a desired range. Usage of individual machines may be monitored to assess, for example, commercial viability.

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**VIDEO DISPLAY SYSTEMS**

This invention relates to video display systems, particularly for displaying video simulation of player-operable entertainment machines.

Multiple player-operable entertainment machines may be provided in  
5 arcades or other entertainment premises.

The machines may include coin-operated amusement-with-prizes (AWP) machines, such as 'fruit' or 'poker' machines of the kind having a main display device for displaying a selected combination of symbol at a win zone. As used herein the term coin is intended also to cover tokens, charge  
10 or credit cards or any other means of supplying credit or monetary value.

In the same arcade it is usual for there to be several different kinds of machines so that a player can select a preferred kind of machine and also so that players can try different machines in the hope that this may improve their chances of winning. This adds to player enjoyment.

15 It is also usual for new or prototype machines to be placed in an arcade prior to widespread distribution to assess their popularity and commercial viability.

It is known to provide a video simulation of a player-operable entertainment machine on the Internet. However this can lack the  
20 entertainment value of playing an actual machine, particularly compared with the playing of machines in arcades.

One object of the present invention is to provide enhanced player

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entertainment in the context of a video simulation of a player-operable machine.

According to one aspect of the invention therefore there is provided video display apparatus operable to produce a video simulation of a player-operable entertainment machine, control means for operation by a player to  
5 cause a game to be played with the video-simulated machine, characterised in that the said video simulation is selectable from a plurality of video simulations respectively of different player-operable entertainment machines, and selector means is provided, for operation by the player, for effecting  
10 selection.

With this arrangement, the player can switch from machine to machine generally in like manner to an arcade of actual machines thereby providing enhanced enjoyment.

It is visualised that the invention will find particular application in the  
15 context of the Internet whereby the video display apparatus comprises a web server providing data in HTML or other code capable of producing the visual simulation on a connected pc or terminal monitor with a web browser. However, the invention is not restricted to this arrangement and the apparatus may comprise a local network or even a dedicated pc or the  
20 like.

With regard to the simulated entertainment machines at least some of these may be coin-operated 'fruit' machines as mentioned above.

## 3

Thus, the video simulation may comprise at least one front panel of a coin operated entertainment machine, and preferably there are upper and lower front panels.

5 These fruit machines may be of the 'reel' kind i.e. in which the main display device comprises multiple symbol bearing side-by-side reels which are rotatable, preferably about a common horizontal axis within a housing, behind a window at a win zone. The reels may be actual or video simulated. Each reel may have symbols at equally spaced positions around its-periphery whereby the reels can be brought to rest with one or more  
10 symbols on each reel display through the window on a win line or win lines. If the displayed combination of symbols constitutes a predetermined winning combination an award may be made available to the player.

Moreover, the fruit machines may be of the kind having a supplementary display or 'feature game', particularly a trail-based feature  
15 game, which can be used to enhance the entertainment value of the machine and provide additional or alternative opportunities for winning. Such feature game may be provided by a panel having sections which can be selectively illuminated to represent movement from location to location e.g. along a trail, particularly along a wraparound trail, which may simulate  
20 the playing of a board game.

Play may be transferred from the main reels to the supplementary feature game on a random or predetermined basis and illumination of the

## 4

panel sections may then be effected by, or in correspondence with, a rotatable subsidiary feature reel, or otherwise, representing the spin of a reel or roll of a dice or other selection. Awards or award possibilities may be made available to the player in dependence on the location on the trail to which play has progressed.

In addition these fruit machines may have other known features, such as 'nudge', 'hold', 'gamble' etc.

Additionally or alternatively the simulated entertainment machines may include kinds of entertainment machines other than fruit machines.

The video simulation of the entertainment machine may be such as to present to the player a closely detailed representation of an actual machine including lettering and artwork as appropriate with component parts of the machine shown in their correct relative position and movable or changeable parts moving or changing visually in like manner to the real machine.

The player may have the opportunity of playing the video simulations of the entertainment machine in like manner to the actual machine.

In particular there may be credit means operable to provide credit whereby said game is playable after provision of predetermined game-playing credit value, and award means operable to make available a payout following a winning outcome of a game.

Thus there may be provision of or insertion of credit which may be simulated monetary value which may be entered by the player or which may

## 5

be automatically entered at the start of a playing session, or which may be real monetary value entered by the player e.g. by means of credit card (by player entry of credit card data) or by charge to an existing player account or otherwise.

5           Also, there may be provision for the player to operate machine controls such as start, hold, nudge, gamble, payout buttons etc.

Wins within a game may be rewarded with extra features, e.g. nudge steps, or with a points score, and a winning outcome to a game may result in a notional monetary payout or as a real payout credited to the player.

10          The machine simulation may include the usual meters showing game-play credit, wins etc.

Entry of data and operation of controls may be achieved by use of a computer keyboard or a mouse which can be clicked on displayed buttons or otherwise.

15          The arrangement may be such that only one machine is displayed at a time, or alternatively multiple machines may be displayed. Selection of machines may be achieved in any suitable manner preferably such that the selector means is operable for selection from a displayed menu of the video simulations e.g. by mouse click on a menu of game names or otherwise.

20          On switching from one selected machine to another, credit may be transferred to the new machine automatically or as selected by the player, partially or completely.

The payout of an actual fruit machine may be on a wholly random basis. That is, the stopping position of the reels may be determined by software generated random numbers. If this is related to the number of symbols on each reel (typically 24) the likelihood of obtaining any particular combination (e.g. a one-off jackpot combination) would be the product of the numbers of symbols (e.g.  $24 \times 24 \times 24$  for a three reel machine). In order to have a reduced likelihood, and hence a possibly larger jackpot payout, it is known to increase the 'virtual' number of symbols for each reel i.e. So that the random selection for each reel is from a series of symbols greater in number than the stopping position of the reel. Thus, for example, a 24 stopping position reel may use a series of say 30 symbols whereby the likelihood of the reel stopping on a single jackpot symbol is 1:30 not 1:24.

This technique may be used in the context of the present invention.

Thus, in one embodiment each reel has a predetermined plurality of symbols which are displayed in sequence during rotation of the reel and the reel then comes to rest to display one or more selected symbols on a win line or win lines in the win zone, wherein the symbol is selected from a plurality of symbols which is greater than said predetermined plurality.

It is also known to use a pseudo-random arrangement with a compensator which operates to maintain pay-outs as close as possible to a desired percentage (e.g. say 80% of game-play credit is returned as prizes).

With this arrangement, after each play a win counter is incremented or

decremented depending on the game outcome. When the counter is deemed to be outside an acceptable range (due to too many or too few wins) the outcome of games is now influenced to return the counter to the acceptable range. This may involve rejection and reselection of generated random numbers, deliberate selection of specific outcomes such as jackpots, nudge features, feature game transfers etc., or otherwise.

This technique may also be used in the context of the present invention.

Thus, in one embodiment, there is provided a compensator which monitors the percentage of game-play credit which is paid out as winnings, the compensator being operable to influence the outcome of games to maintain the percentage within a predetermined range.

By use of win pay-out percentage compensation and/or virtual increase in reel stopping positions as described above play of the simulated entertainment machines can represent closely play of actual machines thereby enhancing player enjoyment.

Thus, and in accordance with a second aspect of the present invention, there is provided video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine of the symbol-bearing rotatable reel coin-operated kind, characterised in that win likelihood is influenced by virtual increase in reel stopping positions such that each reel has a predetermined plurality of



symbols which are displayed in sequence during rotation of the reel and the reel then comes to rest to display one or more selected symbols on a win line or win lines in the win zone, wherein the symbol is selected from a plurality of symbols which is greater than said predetermined plurality.

5           In accordance with a third aspect of the invention there is provided video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine of the symbol-bearing rotatable reel coin-operated kind, characterised in that win likelihood is influenced by win pay-out percentage compensation whereby there is  
10       provided a compensator which monitors the percentage of game-play credit which is paid out as winnings, the compensator being operable to influence the outcome of games to maintain the percentage within a predetermined range.

          The second and third aspects of the invention may apply in the  
15       context of the first aspect of the invention.

          The arrangements of the first, second and third aspects of the invention may be used for assessment and evaluation of machines whereby a monitoring device may be linked to a particular machine to monitor parameters such as frequency and duration of use, number of plays in a  
20       session, credit token and paid out etc.

          Thus, there may be provided a monitoring device operable to monitor at least one parameter of player operation of at least one said video-

simulated machine.

This information may relate solely to the monitored machine or may be collected for a number of machines so that a relative assessment and evaluation can be effected. The resulting information may be made  
5 available only to an authorised person and not to players, this being achieved by relaying information to a separate control location not accessible to the player and/or by providing on-line access to data via a password protected interface.

Thus, and in accordance with a fourth aspect of the invention there is  
10 provided a video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine, such as a machine of the symbol bearing rotatable reel coin-operated kind, characterised by the provision of a monitoring device for assessment and evaluation of usage of the machine. The fourth aspect of the invention may  
15 apply in the context of the first and/or second aspects.

The invention will now be described further by way of example only and with reference to the accompanying drawings in which:-

Figure 1 is a schematic diagram of one form of video display apparatus according to the invention;

20 Figure 2 & 3 show example screen displays of a terminal of the apparatus of Fig. 1.

As shown in the drawings, an Internet-based 'virtual arcade' has a

## 10

server 1 accessible from PCs 2 in the usual way i.e. using web browsers in the PCs 2 and HTML or other web browser coding at the addressed location of the server 1.

On accessing the appropriate web site, a user is presented with an  
5 initial menu, as shown in Fig. 2, which relates to a number of machines 3 available in the virtual arcade. The menu also includes 'credit facility' 4 and 'quit' options 5.

On selecting the 'credit facility' option e.g. by a 'mouse over' and 'mouse click', the player is presented with a secure form-based section for  
10 adding monetary credit to the player's account e.g. by entry of credit card details.

The player can then return to the menu and select one of the machines 3.

There is then produced on the player's PC 2 a detailed representation  
15 of the top and bottom panels 6, 7 of a reel-type fruit machine (Fig. 3) including artwork, lettering, movable and changeable components (such as reels, back illuminated ladders and trails, LED meters and counters etc), and, beneath the panels 6, 7, player controls 8 (such as push buttons).

The player can now play the machine in the usual way by pressing  
20 buttons 8 (start, nudge, hold, pay-out etc.) by mouse click on the displayed buttons.

The machine then operates in the usual way by spinning the reels 9,

moving the back-illumination etc. Symbol combinations are selected and in the case that wins are awarded the player can attain a pay-out by mouse-click of the pay-out button 8. Awards paid out may be credited to the player's account.

5           The course of play is determined in exactly the same way as an actual machine and this may use random number generation modified by virtual increase in reel stopping position and/or percentage pay-out monitoring and compensation.

10           The screen has a mouse clickable option 10 to return to the main menu whereby the player can add more credit to his account, arrange for refund of credit, quit, or switch to a different machine. On switching to a different machine credit may be transferred.

15           The screen option to return to the main menu may only be available at the end of a game and provision may be made for evaluating and remembering current credit in the event that access to the web site or to a machine is terminated prematurely.

20           Each machine is associated with monitoring software at the server 1 which assesses and evaluates play. Thus, parameters such as operational characteristics i.e. whether the machine functions as intended, and popularity characteristics, i.e. frequency and duration of play, and in particular commercial characteristics i.e. monetary value taken over a period of time, are monitored. The resulting data can be accessed on the server

e.g. from a control PC using password protected access.

This data can be used to determine whether the machine should be distributed as an actual machine.

5 With the virtual arcade described above, player enjoyment is much enhanced and valuable information relating to commercial viability of new machine ideas can be obtained.

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

CLAIMS

1. Video display apparatus operable to produce a video simulation of a player-operable entertainment machine, control means for operation by a player to cause a game to be played with the video-simulated machine, characterised in that the said video simulation (6-9) is selectable from a plurality of video simulations respectively of different player-operable entertainment machines, and selector means (3) is provided, for operation by the player, for effecting selection.
2. Apparatus according to claim 1 characterised by the provision of an Internet web server (1) arranged to produce said video simulation on a connected monitor (2) with a web browser.
3. Apparatus according to claim 1 or 2 characterised in that selector means is operable for selection from a display menu (3) of the video simulations.
4. Apparatus according to any one of claims 1 to 3 characterised in that the video simulation (3-9) comprises at least one front panel (6) of a coin-operated entertainment machine.
5. Apparatus according to claim 4 characterised in that the video simulation (3-9) comprises upper and lower front panels (6, 7).
6. Apparatus according to claim 4 or 5 characterised in that the video simulation (3-9) includes a main display device comprising multiple symbol-bearing side-by-side reels (9) which are rotatable behind a

window in the (or one) said panel (7) at a win zone.

7. Apparatus according to claim 6 characterised in that each reel has a predetermined plurality of symbols which are displayed in sequence during rotation of the reel (9) and the reel (9) then comes to rest to display at least one selected symbol on at least one win line in the win zone, wherein the symbol is selected from a plurality of symbols which is greater than said predetermined plurality.

8. Apparatus according to any one of claims 4 to 7 characterised in that the video simulation includes a trail-based feature game on the (or one) said panel (6).

9. Apparatus according to any one of claims 1 to 8 characterised by the provision of credit means operable to provide credit whereby said game is playable after provision of predetermined game-playing credit value, and by the provision of award means operable to make available a payout following a winning outcome of a game.

10. Apparatus according to any one of claims 4 to 9 characterised in that game-playing credit can be transferred between different machines.

11. Apparatus according to claim 9 or 10 characterised by the provision of a compensator which monitors the percentage of game-play credit which is paid out as winnings, the compensator being operable to influence the outcome of games to maintain the percentage within a predetermined range.

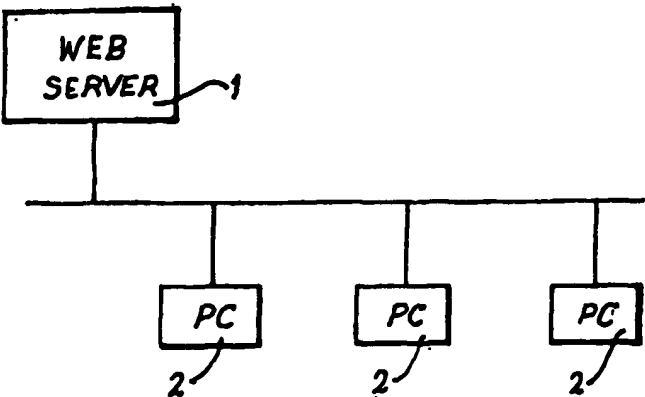
12. Video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine of the symbol-bearing rotatable reel coin-operated kind, characterised in that win likelihood is influenced by virtual increase in reel stopping positions such that each reel has a predetermined plurality of symbols which are displayed in sequence during rotation of the reel (9) and the reel (9) then comes to rest to display at least one selected symbol on at least one win line in the win zone, wherein the symbol is selected from a plurality of symbols which is greater than said predetermined plurality.

13. Video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine of the symbol-bearing rotatable reel coin-operated kind, characterised in that win likelihood is influenced by win pay-out percentage compensation whereby there is provided a compensator which monitors the percentage of game-play credit which is paid out as winnings, the compensator being operable to influence the outcome of games to maintain the percentage within a predetermined range.

14. Video display apparatus according to any one of claims 1 to 13 characterised by the provision of a monitoring device operable to monitor at least one parameter of player operation of at least one said video-simulated machine.



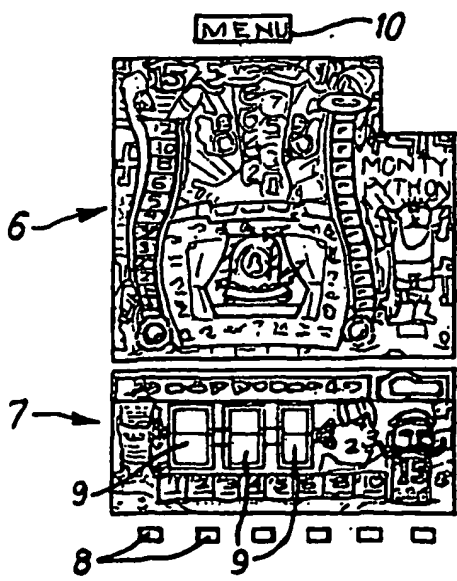
15. Video display apparatus operable to produce via a network, such as the Internet, a video simulation of an entertainment machine, such as a machine of the symbol bearing rotatable reel coin-operated kind, characterised by the provision of a monitoring device for assessment and evaluation of usage of the machine.



**FIG. 1**

- 3 { MONTYPYTHON
- REVOLUTION
- JACKPOTTEERS
- 4 { KING KEBAB
- 5 { Credit Facility
- Quit Playing

**FIG. 2**



**FIG. 3**

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